

SAFETY DATA SHEET

North American Version

GALDEN(R) HT HIGH-BOILING

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Identification of the substance or mixture

Product name : GALDEN(R) HT HIGH-BOILING
Product grade(s) : HT170; HT200; HT230; HT270

Structural formula : CF₃-O-(C₃F₆O)_n-(CF₂-O)_m-CF₃
Molecular Weight :
Average value : 700 - 1,600

1.2. Use of the Substance/Mixture

Recommended use : - Heat transfer medium
- For industrial use only.

1.3. Company/Undertaking Identification

Address : SOLVAY SOLEXIS, INC.
10 LEONARD LANE
WEST DEPTFORD NJ 08086
United States

1.4. Emergency and contact telephone numbers

Emergency telephone : 1 (800) 424-9300 CHEMTREC ® (USA & Canada)

Contact telephone number : (856) 853-8119 (Product information)
(product information):

2. HAZARDS IDENTIFICATION

2.1. Emergency Overview:

NFPA : H= 1 F= 0 I= 0

General Information

Appearance : liquid
Colour : colourless
Odour : odourless

Main effects

- The product is biologically inert.
- Not hazardous in normal conditions of handling and use
- Ecological injuries are not known or expected under normal use.
- Thermal decomposition can lead to release of toxic and corrosive gases.

2.2. Potential Health Effects:

Inhalation

- No known effect.

Eye contact



- Redness

Skin contact

- Redness

Ingestion

- Ingestion may provoke the following symptoms:
- Symptoms: Nausea, Vomiting, Diarrhoea.

Other toxicity effects

- See section 11: Toxicological Information

2.3. Environmental Effects:

- See section 12: Ecological Information

3. COMPOSITION/INFORMATION ON INGREDIENTS

1-Propene, 1,1,2,3,3,3-hexafluoro-, oxidized, polymd.

CAS-No. : 69991-67-9
Concentration : > 99.9 %

4. FIRST AID MEASURES

4.1. Inhalation

- Move to fresh air in case of accidental inhalation of fumes from overheating or combustion.
- Oxygen or artificial respiration if needed.

4.2. Eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- If eye irritation persists, consult a specialist.

4.3. Skin contact

- Wash off with soap and water.
- If symptoms persist, call a physician.

4.4. Ingestion

- Drink 1 or 2 glasses of water.
- Do NOT induce vomiting.
- If symptoms persist, call a physician.

5. FIRE-FIGHTING MEASURES

5.1. Suitable extinguishing media

- Water
- powder
- Foam
- Dry chemical
- Carbon dioxide (CO₂)

5.2. Extinguishing media which shall not be used for safety reasons

- None.

5.3. Special exposure hazards in a fire

- The product is not flammable.
- Not explosive
- In case of fire hazardous decomposition products may be produced such as: Gaseous hydrogen fluoride (HF), Fluorophosgene

5.4. Hazardous decomposition products

- Gaseous hydrogen fluoride (HF).
- Fluorophosgene

5.5. Special protective equipment for fire-fighters

- Wear self-contained breathing apparatus and protective suit.
- When intervention in close proximity wear acid resistant over suit.

5.6. Other information

- Evacuate personnel to safe areas.
- Approach from upwind.
- Protect intervention team with a water spray as they approach the fire.
- Keep containers and surroundings cool with water spray.
- Keep product and empty container away from heat and sources of ignition.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

- Ensure adequate ventilation.
- Material can create slippery conditions.
- Sweep up to prevent slipping hazard.
- Prevent further leakage or spillage if safe to do so.
- Keep away from open flames, hot surfaces and sources of ignition.
- Refer to protective measures listed in sections 7 and 8.

6.2. Environmental precautions

- Should not be released into the environment.
- The product should not be allowed to enter drains, water courses or the soil.
- In case of accidental release or spill, immediately notify the appropriate authorities if required by Federal, State/Provincial and local laws and regulations.

6.3. Methods for cleaning up

- Soak up with inert absorbent material.
- Suitable material for picking up
- Dry sand
- Earth
- Shovel into suitable container for disposal.

7. HANDLING AND STORAGE

7.1. Handling

- No special handling advice required.
- Ensure adequate ventilation.
- Use personal protective equipment.
- Keep away from heat and sources of ignition.
- To avoid thermal decomposition, do not overheat.
- Take measures to prevent the build up of electrostatic charge.
- Clean and dry piping circuits and equipment before any operations.
- Ensure all equipment is electrically grounded before beginning transfer operations.

7.2. Storage

- No special storage conditions required.
- Keep away from heat and sources of ignition.
- Keep in properly labelled containers.

- Keep away from combustible material.
- Keep away from incompatible products

7.3. Packaging material

- polyethylene containers

7.4. Other information

- Provide tight electrical equipment well protected against corrosion.
- Refer to protective measures listed in sections 7 and 8.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure Limit Values

Remarks:

- Threshold limit values of by-products from thermal decomposition

Hydrogen fluoride anhydrous

- US. ACGIH Threshold Limit Values 2009
time weighted average = 0.5 ppm
Remarks: as F
- US. ACGIH Threshold Limit Values 2009
Ceiling Limit Value = 2 ppm
Remarks: as F
- US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
time weighted average = 3 ppm
Remarks: as F
- US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
Short term exposure limit = 6 ppm
Remarks: as F
- US. ACGIH Threshold Limit Values 2009
Remarks: as F, Can be absorbed through skin.
- US. OSHA Table Z-2 (29 CFR 1910.1000) 02 2006
time weighted average = 3 ppm
- US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) 02 2006
Permissible exposure limit = 2.5 mg/m³
Remarks: as F
- US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008
time weighted average = 3 ppm
Remarks: as F
- US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008
Short term exposure limit = 6 ppm
Remarks: as F

Carbonyl difluoride

- US. ACGIH Threshold Limit Values 2009
time weighted average = 2 ppm
- US. ACGIH Threshold Limit Values 2009
Short term exposure limit = 5 ppm
- US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
time weighted average = 2 ppm
time weighted average = 5 mg/m³
- US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
Short term exposure limit = 5 ppm
Short term exposure limit = 15 mg/m³
- US. OSHA Table Z-2 (29 CFR 1910.1000) 02 2006

time weighted average = 2.5 mg/m³

Remarks: Dust

- US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) 02 2006
Permissible exposure limit = 2.5 mg/m³
Remarks: as F
- US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008
time weighted average = 2 ppm
time weighted average = 5 mg/m³
- US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008
Short term exposure limit = 5 ppm
Short term exposure limit = 15 mg/m³

ACGIH® and TLV® are registered trademarks of the American Conference of Governmental Industrial Hygienists.

SAEL = Solvay Acceptable Exposure Limit, Time Weighted Average for 8 hour workdays. No Specific TLV STEL (Short Term Exposure Level) has been set. Excursions in exposure level may exceed 3 times the TLV TWA for no more than a total of 30 minutes during a workday and under no circumstances should they exceed 5 times the TLV TWA.

8.2. Engineering controls

- Provide local ventilation appropriate to the product decomposition risk (see section 10).
- Refer to protective measures listed in sections 7 and 8.
- Apply technical measures to comply with the occupational exposure limits.
- For additional information, consult the current edition of The Guide to the Safe Handling of Fluoropolymers published by the Society of Plastics Industry, Inc. (SPI) Fluoropolymer Division.

8.3. Personal protective equipment

8.3.1. Respiratory protection

- No personal respiratory protective equipment normally required.
- Wear self-contained breathing apparatus in confined spaces, in cases where the oxygen level is depleted, or in case of significant emissions.
- Use only respiratory protection that conforms to international/ national standards.
- In case of decomposition (see Section 10), wear a suitable respirator with a combination filter for organic vapor and particulate.
- Use NIOSH approved respiratory protection.
- Comply with OSHA respiratory protection requirements.

8.3.2. Hand protection

- Rubber or plastic gloves
- Latex gloves
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

8.3.3. Eye protection

- Safety glasses with side-shields
- If splashes are likely to occur, wear: Tightly fitting safety goggles

8.3.4. Skin and body protection

- Lab coat

8.3.5. Hygiene measures

- Ensure that eyewash stations and safety showers are close to the workstation location.
- When using do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General Information

Appearance : liquid
Colour : colourless
Odour : odourless

9.2. Important health safety and environmental information

Boiling point/boiling range : 170 - 270 °C (338 - 518 °F)
Flash point : *Remarks:* The product is not flammable.
Flammability : *Remarks:* The product is not flammable.
Explosive properties : *Explosion danger.*
Remarks: Not explosive
Oxidizing properties : *Remarks:* Non oxidizer
Vapour pressure : 0.01 - 1.3 hPa
Relative density / Density : 1.75 - 1.85 g/cm3
Solubility : Water
Remarks: insoluble
: fluorinated solvents
Remarks: soluble

9.3. Other data

Melting point/range : *Remarks:* not applicable
Decomposition temperature : > 290 °C (554 °F)

10. STABILITY AND REACTIVITY

10.1. Stability

- Stable under recommended storage conditions.
- metals promote and lower decomposition temperature
- In presence of titanium and its alloys the decomposition temperature decreases to 260°C.

10.2. Conditions to avoid

- To avoid thermal decomposition, do not overheat.
- Keep away from flames and sparks.
- Keep at temperature not exceeding: 290 °C (554 °F)

10.3. Materials to avoid

- Combustible material, Flammable materials, non-aqueous alkalis, Lewis acids (Friedel-Crafts) above 100°C, Aluminum and magnesium in powder form above 200°C

10.4. Hazardous decomposition products

- Gaseous hydrogen fluoride (HF)., Fluorophosgene

11. TOXICOLOGICAL INFORMATION

Toxicological data

Acute oral toxicity

- LD50, rat, > 15,000 mg/kg

Acute inhalation toxicity

- LC50, 4 h, rat, > 66.6 mg/l

Acute dermal irritation/corrosion

- LD50, rat, > 5,000 mg/kg

Skin irritation

- rabbit, No skin irritation
- rabbit, No skin irritation

Eye irritation

- rabbit, No eye irritation

Sensitisation

- guinea pig, Did not cause sensitization on laboratory animals.

Genetic toxicity in vitro

- Not mutagenic in Ames Test.
- negative , Remarks: Chromosome aberration test in vitro

Remarks

- Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.
- The product is biologically inert.
- Thermal decomposition can lead to release of toxic and corrosive gases.
- Exposure to decomposition products
- Causes severe irritation of eyes, skin and mucous membranes.

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity effects

Acute toxicity

- Fishes, *Oncorhynchus mykiss*, 96 h, > 360 mg/l
Remarks: saturated aqueous solution
- Crustaceans, *Daphnia magna*, 48 h, > 360 mg/l
Remarks: saturated aqueous solution

12.2. Mobility

- Remarks: no data available

12.3. Persistence and degradability

Abiotic degradation

- Result: no data available

Biodegradation

- Remarks: no data available

12.4. Bioaccumulative potential

- Result: no data available

12.5. Other adverse effects

- no data available

12.6. Remarks

- Ecological injuries are not known or expected under normal use.

13. DISPOSAL CONSIDERATIONS

13.1. Waste from residues / unused products

- Do not dump into any sewers, on the ground, or into any body of water. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations.
- Waste characterizations and compliance with applicable laws and regulations are the responsibility of the waste generator.
- Can be incinerated, when in compliance with local regulations.
- The incinerator must be equipped with a system for the neutralisation or recovery of HF.

13.2. Packaging treatment

- Empty containers can be landfilled, when in accordance with the local regulations.

13.3. RCRA Hazardous Waste

- Listed RCRA Hazardous Waste (40 CFR 302) - No

14. TRANSPORT INFORMATION

- Sea (IMO/IMDG)
- not regulated
- Air (ICAO/IATA)
- not regulated
- U.S. Dept of Transportation
- not regulated
- It is recommended that ERG Guide number 111 be used for all non-regulated material.
- Canadian Transportation of Dangerous Goods
- not regulated

15. REGULATORY INFORMATION

15.1. Inventory Information

Toxic Substance Control Act list (TSCA)	: -	In compliance with inventory.
Australian Inventory of Chemical Substances (AICS)	: -	In compliance with inventory.
Canadian Domestic Substances List (DSL)	: -	In compliance with inventory.
Inventory of Existing Chemical Substances (China) (IECS)	: -	In compliance with inventory.
Korea Existing Chemicals Inv. (KECI) (KECI (KR))	: -	In compliance with inventory.
Japanese Existing and New Chemical Substances (MITI List) (ENCS)	: -	In compliance with inventory.
New Zealand Inventory (in preparation) (NZ)	: -	In compliance with inventory.
Philippine Inventory of Chemicals and Chemical Substances (PICCS)	: -	In compliance with inventory.
EU list of existing chemical substances (EINECS)	: -	not applicable, Product falls under the EU-polymer definition..

15.2. Other regulations

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A)

- not regulated.

SARA Hazard Designation (SARA 311/312)

- Acute Health Hazard: No.
- Chronic Health Hazard: No.
- Fire Hazard: No.
- Reactivity Hazard: No.
- Sudden Release of Pressure Hazard: No.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required

- not regulated.

US. EPA CERCLA Hazardous Substances (40 CFR 302)

- not regulated.

US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

- not regulated.

US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

- not regulated.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

- This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm..

OSHA Hazard communication standard

- This material is non-hazardous as defined by the American OSHA Hazard Communication Standard.

15.3. Classification and labelling

Canada. Canadian Environmental Protection Act (CEPA). WHMIS Ingredient Disclosure List (Can. Gaz., Part II, Vol. 122, No. 2)

- Does not contain a controlled product

Remarks: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

Ratings :

NFPA (National Fire Protection Association)

Health = 1 Flammability = 0 Instability = 0

Further information

Material Safety Data Sheets contain country specific regulatory information; therefore, the MSDS's provided are for use only by customers of the company mentioned in section 1 in North America. If you are located in a country other than

Canada, Mexico or the United States, please contact the Solvay Group company in your country for MSDS information applicable to your location.

The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. (Unless noted to the contrary, the technical information applies only to pure product).

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